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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,334	08/21/2006	Guolin Xu	P/2778-63	3718

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EXAMINER	
BARNHART, LORA ELIZABETH	

ART UNIT	PAPER NUMBER
1651	

MAIL DATE	DELIVERY MODE
11/19/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/535,334	XU ET AL.	
	Examiner	Art Unit	
	Lora E. Barnhart	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7,15,17-20,22,23,27,31,32,35-37 and 39* is/are pending in the application.

4a) Of the above claim(s) *1-5,7,35-37 and 39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15,17-20,22,23,27,31 and 32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/11/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendments

Applicant's amendments filed 8/17/09 to claims 15, 17-20, 22, 23, 27, 31, and 32 have been entered. Claim 21 has been canceled. No claims have been added. Claims 1-5, 7, 15, 17-20, 22, 23, 27, 31, 32, 35-37, and 39 remain pending in the current application, of which claims 15, 17-20, 22, 23, 27, 31, and 32 are being considered on their merits. Claims 1-5, 7, 35-37, and 39 remain withdrawn from consideration at this time. References not included with this Office action can be found in a prior action. Any rejections of record not particularly addressed below are withdrawn in light of the claim amendments and applicant's comments.

Election/Restrictions

Applicant's election without traverse the species "protease" in the 2/10/09 reply is still in effect over the claims.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

The amendment to claim 19 requires that the five chambers be connected to each other "in consecutive order of first through fifth chambers." There is no support, implied or explicit, in the as-filed specification for this limitation. Applicant points to pages 33-34 and Figure 12 as basis for this limitation, but the examiner finds insufficient disclosure to support the limitation. Figure 12 illustrates a device in which a tissue incubation chamber is connected first to a disruption channel; the channel itself is connected to a product chamber, three buffer chambers, a magnetic bead chamber, and a lysis buffer chamber; there is no waste chamber in the device of Figure 12. Pages 33-34 describe a process that does not appear to be carried out using the device as claimed, since tissue is contacted first with lysis buffer and then passed through a channel. Applicant is required to clarify the basis for the new limitation or cancel the new matter in response to this Office action.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15, 17-20, 22, 23, 27, 31, and 32 remain rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. **In addressing the indefiniteness rejections, applicant is reminded that the claims are drawn to a device, not to any method of using the same.**

The language of a claim must make it clear what subject matter the claim encompasses to adequately delineate its "metes and bounds." See, e.g., *In re Hammack*, 427 F 2d. 1378, 1382, 166 USPQ 204, 208 (CCPA 1970); *In re Venezia* 530

F 2d. 956, 958, 189 USPQ 149, 151 (CCPA 1976); *In re Goffe*, 526 F 2d. 1393, 1397, 188 USPQ 131, 135 (CCPA 1975); *In re Watson*, 517 F 2d. 465, 477, 186 USPQ 11, 20 (CCPA 1975); and *In re Knowlton,* 481 F 2d. 1357, 1366, 178 USPQ 486, 492 (CCPA 1973). The courts have also indicated that before claimed subject matter can properly be compared to the prior art, it is essential to know what the claims do in fact cover. See, e.g., *In re Steele*, 305 F 2d. 859, 134 USPQ 292 (CCPA 1962); *In re Moore*, 439 F 2d. 1232, 169 USPQ 236 (CCPA 1969); and *In re Merat*, 519 F 2d. 1390, 186 USPQ 471 (CCPA 1975). In this case, the claims are nearly so indefinite as to preclude a substantive search by the examiner, because they do not clearly limit the structural and physical properties of the components of the device. Statements of intended use (e.g., "for incubation of a mixture") on their own cannot limit the scope of the device. See M.P.E.P. § 2111.02. Compositions are defined by their physical, structural, and chemical properties, not by an intended use or application.

The amendments to the claims are noted, but they fail to overcome all of the indefiniteness rejections of record, and some of them introduce new sources of confusion. The issues will be addressed in turn.

Claim 15 requires that the device contain "an [*sic*] tissue dissociation chamber wherein tissue is dissociated by enzymes," which is confusing because it is not clear whether tissue and/or enzymes are necessarily elements of the claimed device. The amendment appears to recite a method step, which (as the examiner pointed out in the previous Office action and again above) does not effectively limit the structure of a device. The claim should particularly point out the physical properties and structural

elements of the claimed device and describe the manner in which they are physically associated with each other within the device. Applicant's arguments are noted, but they, like the amendment, regard an active step, not the physical properties of the composition. See reply, page 7, last paragraph. Clarification is required.

Claim 15 refers to "the overall cross-sectional area of the disruption channel," but it is not clear whether "overall area" refers to "average area," "total area," "largest area," or some other measurement. The term "cross-sectional area" is also confusing, because a chamber has an infinite number of possible cross-sections, depending on the location and angle of the section. Clarification is required. Applicant alleges that one would understand these terms based on the specification and drawings. See reply, page 9, first full paragraph. These arguments have been fully considered, but they are not persuasive. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Because claims 17-20, 22, 23, 27, 31, and 32 depend from indefinite claim 1 and do not clarify these points of confusion, they must also be rejected under 35 U.S.C. 112, second paragraph.

Claims 17 and 18 require that additional chambers be present, but the claims do not indicate how these chambers are connected to each other or to the chamber and channel of claim 15. Clarification is required. Applicant alleges that the claims have been amended to address this issue. See reply, page 8, second full paragraph. These arguments have been fully considered, but they are not persuasive. The claim

amendments merely describe functions of the additional chambers. In no way do they require that these additional chambers be connected to those required by claim 15.

Claim 17 requires that the tissue dissociation chamber be "the site of incubation of a mixture of [tissue, enzyme, and buffer]," which appears to be an improper attempt to introduce method steps into the claims. Furthermore, it is not clear whether the claim intends to require that the composition comprise enzymes, tissue, and/or buffer. Clarification is required.

Claim 18 refers to "cells released from said tissue samples," which, again, is an improper attempt to limit the device using method steps. It is not clear whether the limitation is intended to require that the composition comprise cells. Clarification is required.

Claim 19 refers refers to "a lytic solution for suspending cells that are to be lysed," which is confusing because it is not clear whether the composition necessarily contains cells. The examiner suggests the solution be described in terms of what it is, not what it does. Clarification is required.

Claim 22 requires that the tissue dissociation chamber be "capable of receiving [a tissue and an enzyme]," but it is not clear whether tissue and/or enzyme is a necessary component of the device. Clarification is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15, 17, 18-20, 22, 23, 27, 31, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilding et al. (1994, U.S. Patent 5,304,487; reference A). The claims are interpreted as being drawn to a device comprising up to 5 chambers and channels connecting the chambers to each other; one channel contains regions of constriction. Some claims require that that one of the channels comprise inlet and outlet ports. Some claims require that the device be microscale and/or automated.

Wilding teaches a microfabricated fluid handling device for manipulation of cell suspensions. See abstract. In one embodiment, the device of Wilding contains a cell separation region (a "chamber" in the broadest reasonable sense of the word), a cell lysis chamber, and a polymerase chain reaction chamber. See Figure 7 and Example 2 at column 10. The device contains numerous inlet and outlet ports. See column 10, lines 46-48. The lysis chamber contains protrusions that tear open the cells moving through the device and release their contents. See column 11, lines 3-6, and reference numeral 24 in Figures 6 and 7. PCR may be conducted within the device and the products of the process analyzed. See column 11, lines 7-28. Wilding teaches that the chambers and channels within the device may have cross-sectional dimensions as small as 0.1μm. See column 2, lines 48-58. Wilding's device is small and disposable. See column 2, lines 28-32.

The limitations "wherein tissue is dissociated by enzymes" in claim 15; "the site of incubation of [tissue, enzyme, and buffer]" in claim 17; "for recovery of the cells released from said tissue samples" in claim 18; "for incubation of [tissue, enzyme, and buffer],"

"for comprising a lytic solution," and "for the collection and isolation of nucleic acid molecules and/or proteins" in claim 19; "for receiving a tissue sample from the tissue dissociation chamber" and "for discharging a disrupted tissue sample to a chamber containing a lytic solution" in claim 20; and "capable of receiving at least one tissue sample and at least one enzyme for tissue dissociation" in claim 22 do not particularly limit the structure of the claimed device and therefore cannot disqualify the Wilding reference as anticipatory art. The chambers of Wilding are clearly capable of receiving, disrupting, lysing, processing, and transporting fluids and other samples containing cells; blood, for example, is a fluid tissue comprising cells that reads on the instantly claimed "tissue sample." The PCR chamber of Wilding is clearly capable of collecting nucleic acid molecules. None of the claims clearly requires that lytic solution, enzymes, tissue, or buffer necessarily be present within the device. The limitations of claim 27 address components that are not necessarily present within the claimed device. The "fully automated complete micrototal analytical system" limitation of claim 31 is anticipated by Wilding's teaching of conducting PCR directly within the device. Regarding claim 32, any object is disposable in some manner; furthermore, Wilding's device is explicitly described as being disposable in the conventional sense of the term.

Applicants' arguments regarding the art rejections of record allege that the art does not teach a device with a region of constriction. See reply, page 9, last paragraph, through page 10, first paragraph; and page 11, second and third paragraphs. Applicants allege that the art does not suggest including lytic solution. See page 11, first paragraph. These arguments have been fully considered, but they are not

persuasive. The arguments regarding a region of constriction are fully addressed by the Wilding reference. None of the claims clearly requires that the device comprise a lytic solution, so arguments as to this point are irrelevant since they regard features that are not claimed.

No claims are allowed. No claims are free of the art.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lora E. Barnhart whose telephone number is (571)272-1928. The examiner can normally be reached on Monday-Thursday, 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Wityshyn can be reached on 571-272-0926. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lora E Barnhart/
Primary Examiner, Art Unit 1651